

EXHIBIT A

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Patent Idea Details for Idea #29687

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GENERAL INFORMATION

Title: Method of Supporting SONET and ATM Inter-working in a Mixed Multi-Service SONET/ATM Switch

ID: 29687

Patent No.: ---, ---

URL:

Inventors: [Eugene Wang \(etw\)](#), [Nang Tran \(nangtran\)](#), [Norman Tang \(ntang\)](#), and [Vu Nguyen \(vtn\)](#)

More details on these inventors listed below.

Date Entered: 28-Sep-1998

Date Modified: 28-Sep-1998

Background: The current Jupiter ATM switch is designed to provide an integrated solution for high-bandwidth backbone switching in large ATM transport networks. Its switching architecture is based on up to four cross-point Switch Modules each with 4 Switch ASICs and 16 serial links connecting to every Service Modules (SMs). This ATM Jupiter switch can be seamlessly migrated to a mixed Multi-Service SONET/ATM Switch or a pure SONET Cross-Connect Switch, with replacement and/or additions of ATM/SONET Interface Modules and the SONET Cross-Connect (xC) Modules, enabling Jupiter to also fit in the SONET transport networks. The three configurations of the Jupiter are:

1.0 Full OC192 Per Slot ATM Switch

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- Up to 4 Switch Modules (XM-60)
- 1:3 Switch Modules Redundancy
- 240 Gbps Total Switching Capacity
- OC192 Sustaining Per Slot Data Traffic

2.0 Full OC48 Per Slot SONET Cross-Connect Switch

- Up to 2 SONET Cross-Connect Modules (SONET xC)
- 1:1 SONET xC Module Redundancy
- 12 x 12 STS-48 Time Slot Interchange (TSI) Cross-connect Capacity
- STS-1 space and time rearrangement to and from any SONET TDM modules

3.0 Mixed Multi-Service SONET/ATM Switch

- Up to 2 Switch Cards (XM-60), 125 Gbps total bandwidth
- Up to 2 SONET Cross-Connect Modules (SONET xC), 12 x 12 STS-48 TSI
- Support up to OC48 ATM and/or OC48 SONET per slot capacity
- Supports SONET/ATM inter-working
- Supports Add, Drop and Passthru functionality

This patent addresses the 3rd Jupiter configuration describing the method of supporting the SONET/ATM inter-working capability in a mixed multi-service SONET/ATM switch utilizing the chipsets being developed from Lucent and Vitesse.

Summary: Please refer to frame document ENG-27781 for system and card level block diagrams.

1.0 High Level System Description

The mixed multi-service SONET/ATM Jupiter switch supports key high-end networking applications including the following:

- Linear Add Drop Multiplexing (ADM)
- SONET ring applications using UPSR or BLSR automatic protection switching and
- SONET/ATM inter-working capability

The minimum SONET/ATM switch configuration comprises of 1 Switch Module and 1 SONET xC Module. Redundant Switch Module and SONET xC Module can be plugged-in for 1+1 redundancy for ATM switch fabric and for SONET cross-connect, respectively. The following shows the overall block diagram of how the SMs are interconnected to the switch fabric offering mixed OC48 ATM and OC48 SONET data traffic per slot. Two sets of system synchronization clocking scheme will be supported, one for ATM Switch Module running at 125Mhz and one for SONET xC at 78Mhz.

2.0 SONET xC Module

The TSI switch fabric of the SONET xC Module will be based on the 16 x 16 STS-48 TSI switching IC from Vitesse (VSC8182). This central switch IC performs time and space rearrangement of SONET data streams at the STS-1 level, allowing any STS(n) [n = 1, 3c, 12c] signal of an incoming STS-12 to be mapped into any byte position of any STS-12 output. All STS-12 inputs and outputs are LVDS serial signals running at 622.08 Mbps. The ACP interface is identical to the ATM Switch Module and the system synchronization clock is separate from the ATM fabric running at 78Mhz.

3.0 SONET/ATM Interface Module

The SONET/ATM Interface Module supports OC3/OC12/OC48 SONET interface solutions for ATM and STM applications. The integrated Pointer Processor and STS Cross-Connect block provides network interface to the SONET xC for all TDM traffics. The data processor of the TADM042G5 provides add drop capability of ATM within the standard SONET/SDH SPE payload.

Advantages: With the integration of the SONET cross-connect capability and the support of the SONET/ATM inter-working within the current ATM Jupiter platform, a completely new set of applications become available for Jupiter (see above Summary). One possible application is to position Jupiter between the SONET transport network and the ATM transport network to pass multi-service traffic between two networks.

Cisco Use: Jupiter backplane will be provisioned to support all above three configurations. The SONET/ATM Interface Module and SONET xC Module can be introduced in later phases.

Method of Detecting Use The method of detecting use by other companies can be found on system that offers the mixed SONET/ATM switching as well as inter-working By Other capability within the same platform.

Companies:

**Previous Public ---
Use:**

**First Written ---
Record Date:**

**First Written ---
Record URLs:**

**Supporting ---
Docs URLs:**

Notes: ---

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1 node, 0% complete.

This Idea is currently in the Review Process.

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